

# PS-Freestyle Rig



## User Manual

## English

Before operating this product, please read the instruction carefully and save this manual for future use. Subject to technical change without any prior notice.

Art. Nr. 26566 | v11111

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# 1. Important Advices

## 1.1. Safety Notes

Temperature range:

The PS Freestyle Rig has been tested from 0° C to +50° C.

For field reports regarding more extreme temperatures please contact P+S TECHNIK Technical Support [helpdesk@pstechnik.de](mailto:helpdesk@pstechnik.de)

Maintenance / Special Tools:

Do not touch glass components with sharp objects. For cleaning only use special cleaning supplies. Refer all servicing to qualified service personnel.

## 1.2. Handling

- Refer all servicing to qualified service personnel
- Verify the connections of chassis, mirror box, cameras and tripod/  
crane/steadycam/shoulder pad are secure.
- Never carry the PS-Freestyle Rig around by using the camera hand grips or the handle of the Mirror Box! Always use the additional hand grips or the PS-Freestyle Hot Rods to carry the PS-Freestyle Rig around
- Never touch the Interlock Block of the Betz Lock. Touching the Interlock Block can cause a jammed locking system and must be repaired by qualified service personnel
- Always use an additional security screw when using the PS-Freestyle V-Mount
- Verify the cameras and lens support can move freely

## 1.3. Cleaning



For cleaning the PS-Freestyle Rig in general only use special cleaning supplies.

NOTE: The special coated Freestyle Mirror is very sensitive. For cleaning the Freestyle Mirror follow these instructions:

- Always wear a pair of new rubbergloves to avoid fingerprints and scratches
- Check the mirror carefully for dirt and scratches
- Never use a brush or cloth to remove sand and other solid particles, or you will damage the mirror. Use an air spray with low pressure to remove this kind of dirt
- Use a soft microfiber cleaning cloth! Never use pressure while wiping to remove dust

- Never use an acid detergent to clean off grease or oil. Use a slight humid microfiber cloth wetted with denatured ethyl alcohol mixture (1:1)

## **1.4. Storage**

- Store the PS-Freestyle Rig in a dry and dust free room
- P+S TECHNIK recommend to store the PS-Freestyle Rig in the original packaging or in the PS-Freestyle Rig Transport Case for transport and shipping. For further informations refer to accessories list S.9.

## **1.5. Transport and shipping**

- Always mount the transport safety for before you transport or ship the PS-Freestyle Rig
- Transport and ship the PS-Freestyle Rig in a custom made foam padded case where all parts are well fixed

P+S TECHNIK recommend to use the original packaging or the PS-Freestyle Rig Transport Case for transport and shipping. For further informations refer to accessories list.

## **1.6. Disposal**

- Dispose of packaging material, defective or unusable components and devices in accordance with standard industry practices
- Keep out of reach of children

## 2. About

### 2.1. The PS-Freestyle Rig

#### **The Rig**

The PS-Freestyle Rig offers a professional solution for creative images by opening the realms of camera movement for stereoscopic imagery.

The PS-Freestyle Rig is designed for heavy camera setups and ensures a quick setup and calibration process as well as stable alignments for broadcast and digital film applications. A range of ergonomic mounting accessories prepare the Freestyle Rig for Steadicam or similar balancing systems, shoulder, crane, dolly and tripod use.

#### **Key Features:**

- Evolution upgraded for heavy camera setups
- Quick adjustment and constant stability of settings
- High stability and G-force approved
- Patented Formula 1 Carbon Technology
- Most versatile rig on the market: ideal for steadicam, shoulder, crane and dolly use
- Integrated motors for use with standard remote control systems
- Ready for Live Broadcast

#### **Available accessories:**

- Camera Plates and Quick-Lock Adapter
- French Flags
- Quarterwave Filter and Protection Glass
- Mounting Accessories: Magic Support, Shoulder Mount, Extension Plate, Hot Rods, etc.
- Transport Cases for Rig and Spare Mirror/Glass

## 2.2. This User Manual



NOTE: Read this User Manual completely before you operate the PS-Free-style Rig the first time. The User Manual is chaptered into useful sections to provide you a fast access to the information you need depending on your current task.

Annexed to the regular user manual you find some patterns and tables with additionally informations such as:

- Technical datas
- Delivery content and accessories patterns

## 3. Product Scope

### 3.1. Scope of delivery

Art. No.	Description	Amount
26479	PS-Freestyle Chassis	1
26299	PS-Freestyle Mirror Box	1
26327	PS-Freestyle Standard Mirror	1
26489	PS-Freestyle rod D20 L120	2
26490	PS-Freestyle rod D20 L150	2
26491	PS-Freestyle rod D20 L180	2
26572	PS-Freestyle Application Interface Plate	1
26557	PS-Freestyle Mounting Plate complete	1
26836	Stand Mount complete	1
26567	PS-Freestyle Light Protection kpl	2
26568	Metric Allen Key 4.0	1
26566	PS-Freestyle User Manual	1
27756	PS-Freestyle Transport Safety	1

### 3.2. Optional accessories

Art. No.	Description	Amount
27022	PS-Freestyle Camera Plate Standard (two recommended)	1
27023	PS-Freestyle Camera Plate V-Mount accessory (two recommended)	1
26556	PS-Freestyle advanced french flag set	1
27179	PS-Freestyle low mode french flag set	1
26563	PS-Freestyle Extension Plate	1
26562	PS-Freestyle Shoulder Pad	1



27494	PS-Freestyle Rod 210mm extralong (two recommended)	1
26327	PS-Freestyle Standard Mirror (additional)	1
27111	PS-Freestyle Transport Case	1
23020	Cable Clamp	1
16528	Side Hand Grip	1
21423	Hand Grip START/STOP	1
21422	Extension for Hand Grip	1
27922	PS-Freestyle Hot Rods	1
27543	PS-Freestyle Magic Support	1
26557	PS-Freestyle Mounting Plate complete (additional)	1
27514	PS-Freestyle Sony HDFA-200 plate complete	1
26504	Camera Bracket for Sony EX-3 complete (two recommended)	1
27008	Chrosziel Flexi-Inserttring Ø 110: 50-85 mm - for lenses with Ø 50-85 mm (two recommended)	1
27007	Chrosziel Flexi-Inserttring Ø 110: 75-98 mm - for lenses with Ø 75-98 mm (two recommended)	1
27708	PS-Freestyle Quarterwave Filter	1
27710	PS-Freestyle Protection Glass	1
	Battery and accessory holder 15mm	1
27412	3D Test Chart Set (two charts)	1

### 3.3. Additional accessories (3rd Party Products)

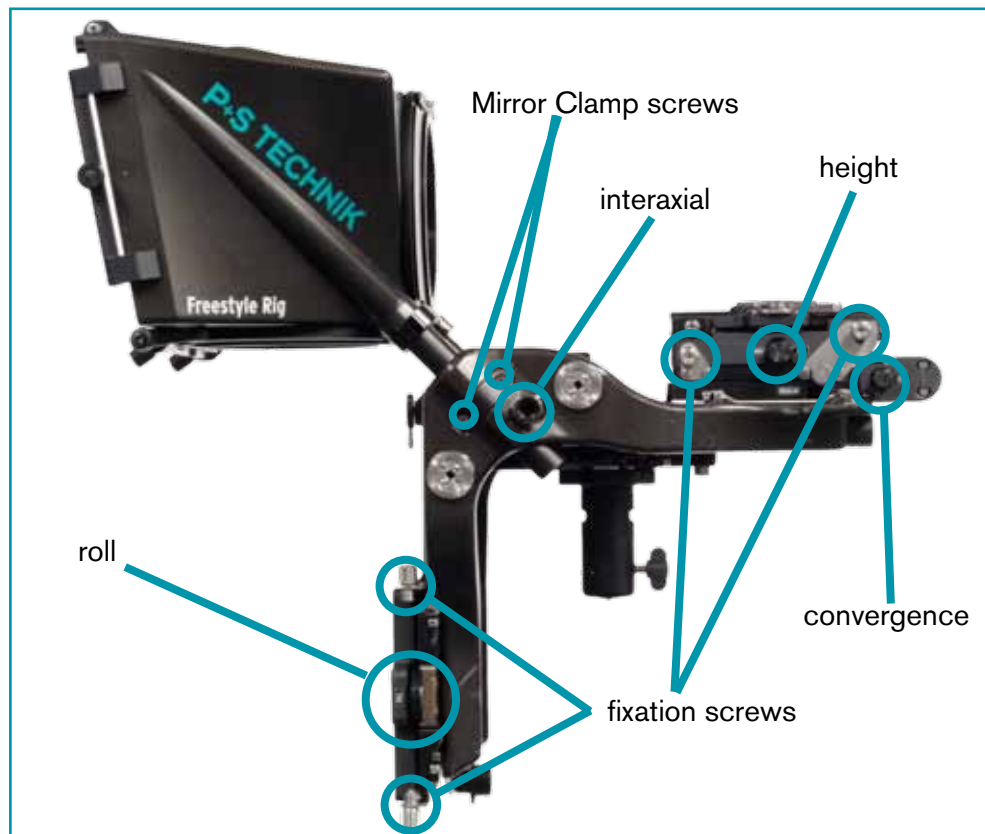


NOTE: P+S Technik does not take any guarantee for technical changes on the 3rd party products.

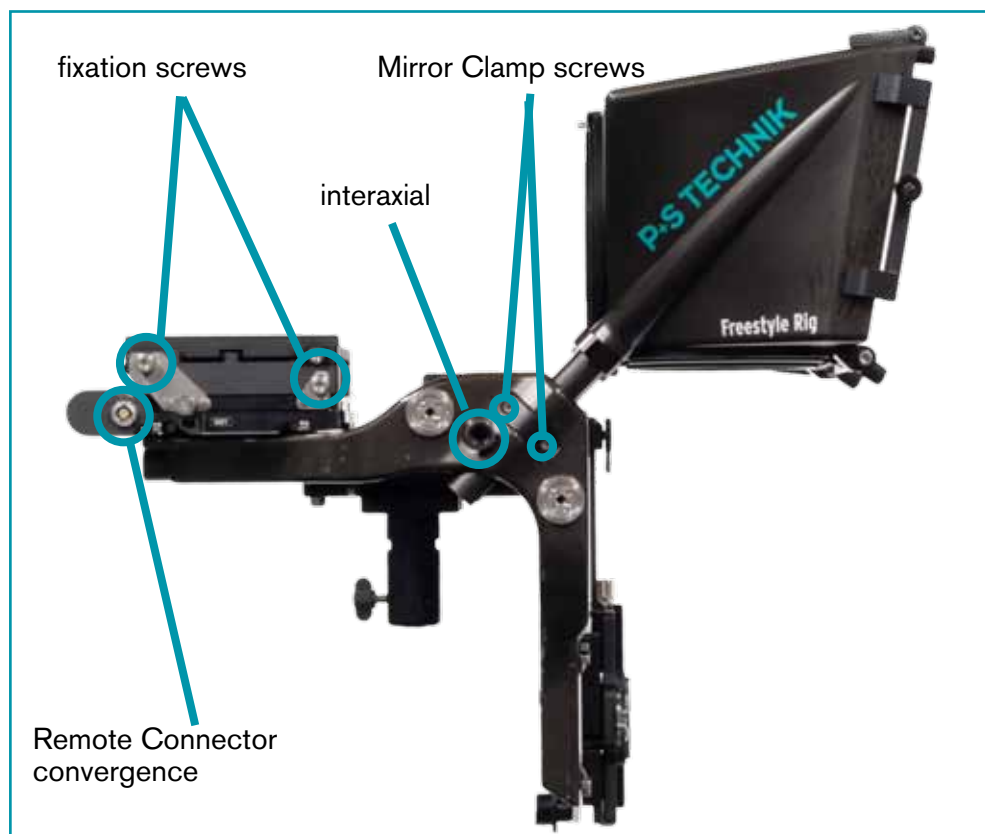
The following 3rd party products are compatible to PS-Freestyle Rig

Item	Description
Remote Control	Every lens control system that support Hédèn motors
Cameras/Lenses	Nearly every camera/lens combination depending on the front diameter of the lens. Refer to chapter 10.1.

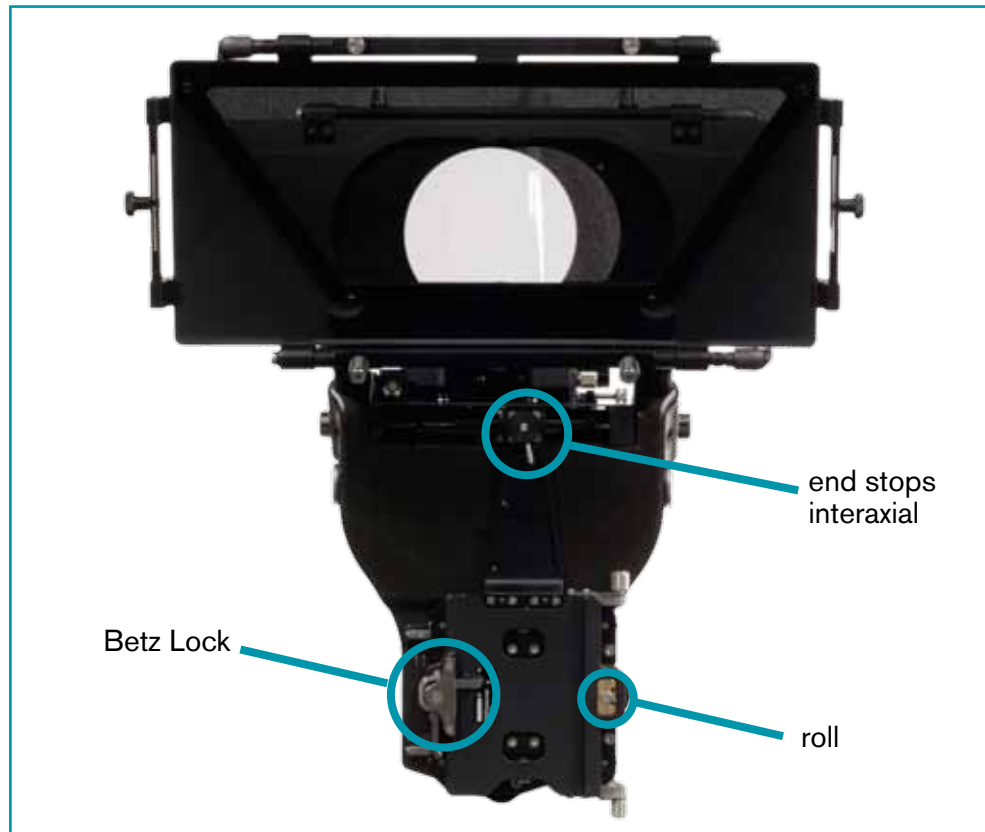
## 4. PS-Freestyle Rig views



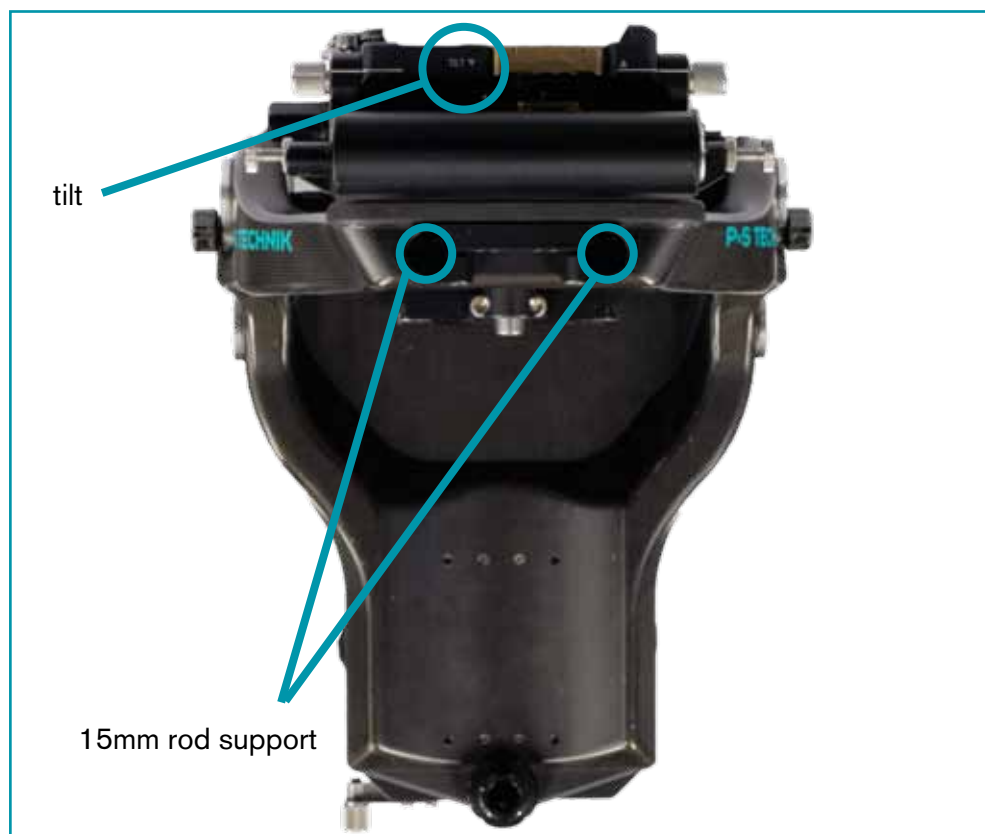
PS-Freestyle Rig left side



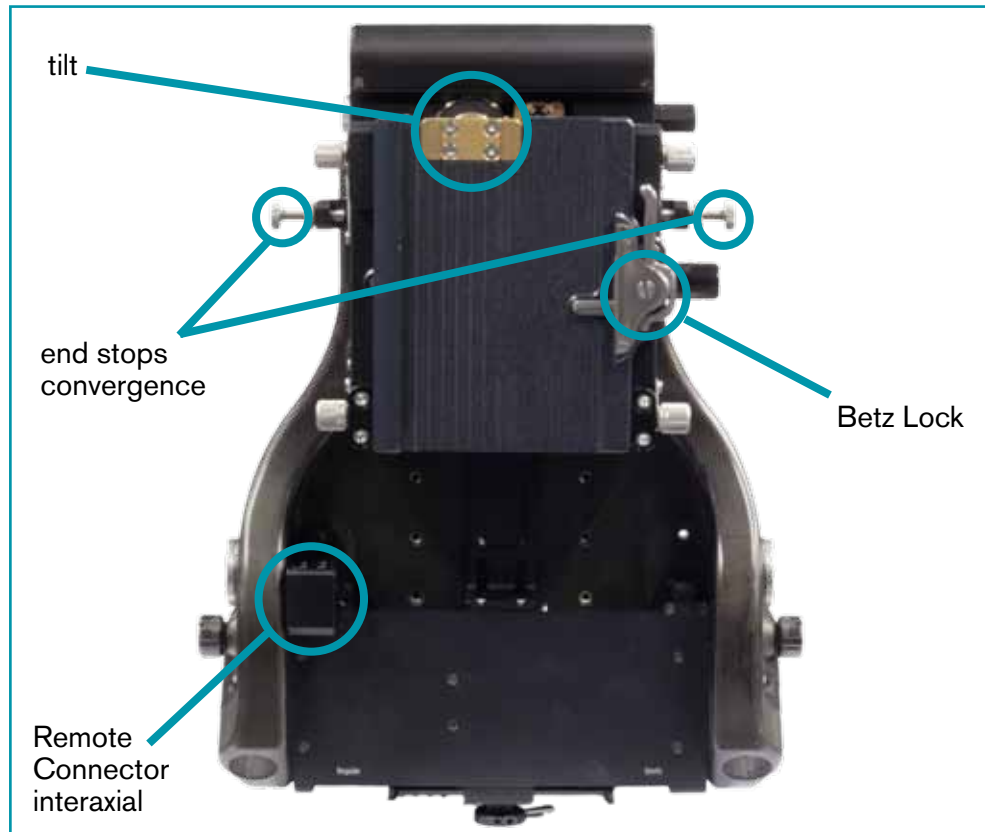
PS-Freestyle Rig right side



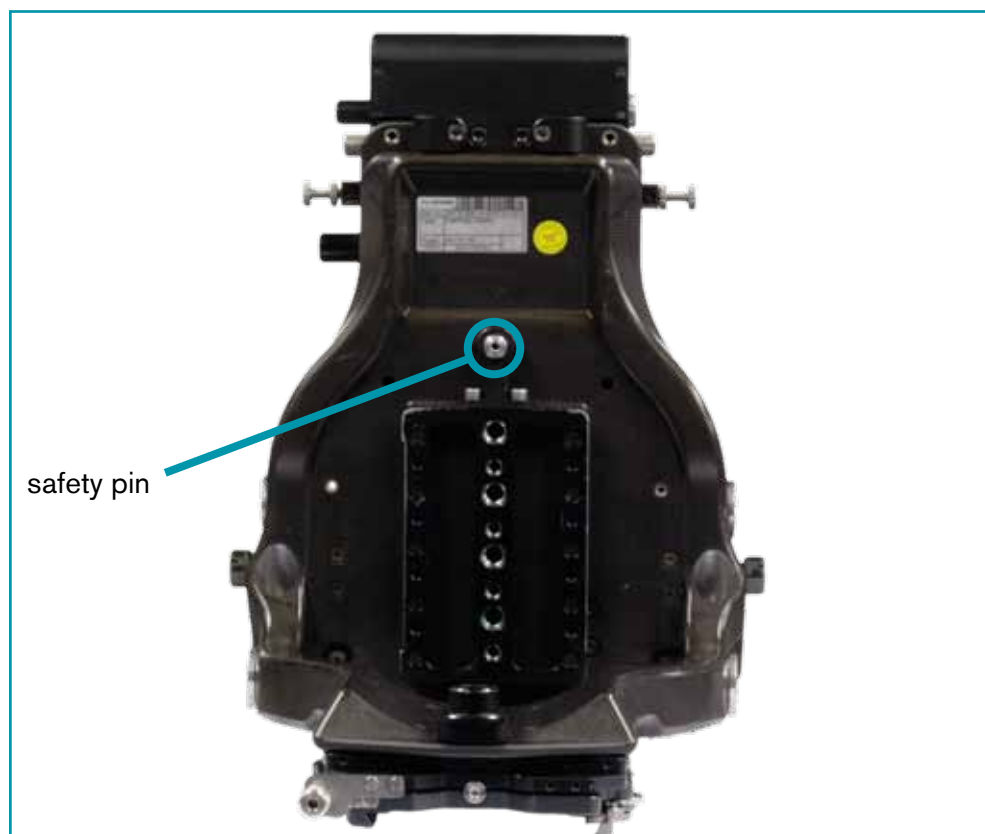
PS-Freestyle Rig front



PS-Freestyle Rig back



PS-Freestyle Rig top



PS-Freestyle Rig bottom

## 5. Set up


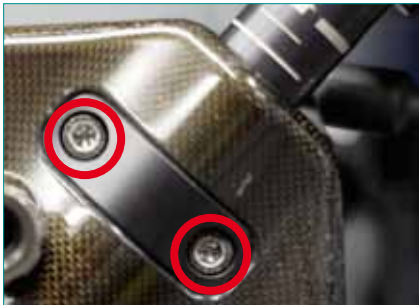
### 5.1. Mechanical Set up



NOTE: Wear rubber gloves when handling the Mirror to avoid fingerprints and scratches.

Necessary tools: Metric Allen Key 4.0, rubber gloves

#### Mirror Box

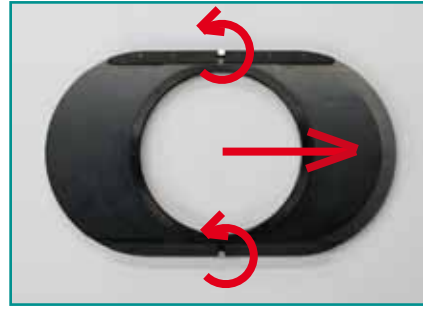
- Mount the Mirror in the Mirror Box with the frame on the outside. The Mirror can stay in the Mirror Box for storage and transportation. Before you shoot verify that the Mirror is clean. See chapter 1.3. for details.
  - Smoothly insert the rods into the Mirror Box as far as they will go. Rod length depends on the cameras and lenses you use: The bigger the cameras and lens diameter the longer the chosen Rod must be. A pair of extralong rod are available as an accessory
  - Close the clamps
- 
- Mount the Mirror Box on the rig chassis. Adjust the center of the camera lenses to the center of the open area of the Mirror box. Tighten the mirror clamp screws
  - To remove the Mirror Box open the clamps to change lenses or filters
  - Attach the optional carbon french flag set (# 26556). When using the rig in low mode you need to attach the large french flag on the other side.
  - Mount the lower french flag attachment. The flags can be used to close and protect the mirror box for storage and transportation.
- 

#### Light protection



NOTE: The light protection can be slid to the left or right side, depending on whether it is attached regular or goofy. A movable second light shield will protect your camera and lens if the light protection is attached in the wrong position. Rotate the light protection to the correct position and close the security shield before starting the next shot.

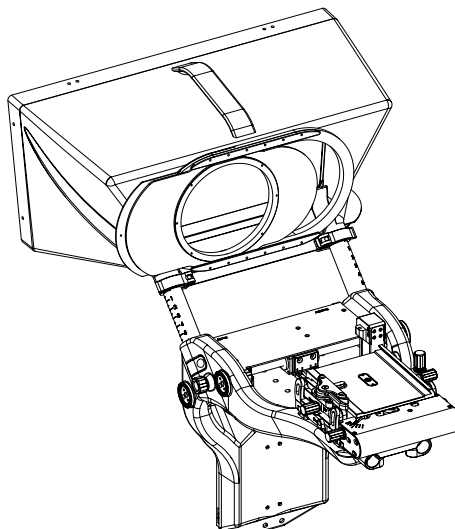
- Loosen the knurled screws on the camera side of the light protection. Slide the light protection to the end position



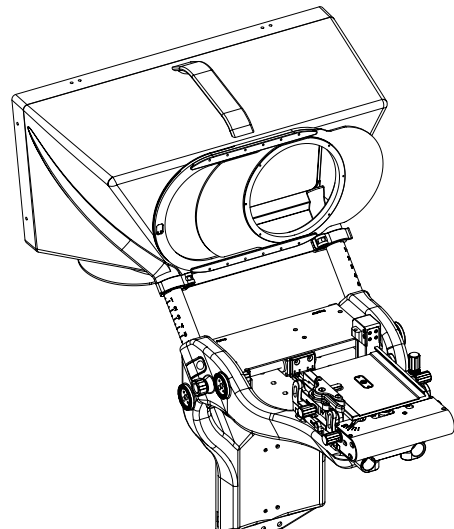
- Press the knurled screws in direction to the center and click the light protection in the mirror box



- Fasten the screws



Light protection with open security shield



Light protection with closed security shield in correct position



NOTE: For light protection to fit your lenses you can use insert rings with a diameter of 110mm. For example the following Flexi Insert rings from Chrosziel. For reasons of flexibility these Flexi Insert rings are recommended. For further information refer to the accessories list chapter 3.2. and 11.2.

Light Protection	max. front lens diameter
Light Protection with Flexi Insert Ring	105mm / 4.13 In
Light Protection without Flexi Insert Ring	110mm / 4.33 In
Without Light Protection	120mm / 4.72 In

## 5.2. Preparation of the cameras



NOTE: Always use camera plates with a security pin. If there is no security pin or special mechanism, the cameras must be secured separately. We recommend to use PS Freestyle Camera Plates. Alternatively slid plates from other manufacturers can be used also, but verify there is a security mechanism.



NOTE: To guarantee a complete safe use of your camera when you use the PS Freestyle Rig V-Mount we recommend to secure it with an additional safety screw. Because of differences between the V-Lock Plate of different companies it is not possible to build a 100% universal V-Lock Mount. P+S TECHNIK gives no guarantee if camera is used without an additional safety-screw.

- Mount cameras on the camera plate
- Adjust both stages to the middle by using the interaxial screw button
- Mount the cameras on the stages



NOTE:

Both cameras have to be secured against falling off.

Both cameras must use the same camera plates.

It is not necessary to pull down the clamp completely to lock the camera to the Rig! Just pull it down gently until the camera plate is well fixed.

Proceed by mounting the 2nd camera on the vertical stage in the same position.

Warning: The mirror will be damaged if the lenses extend more than 5mm into the mirror box. Adjust the "camera end stop" in this position.

### 5.3. Set up the Remote Control

P+S Technik recommend to use a Cmotion Remote System. Alternatively you can use every Lens Control System that support Hédèn Motors.

- Connect the Remote Control System per cable to the built-in motors of the PS-Freestyle Rig.
- Verify the cables are well fixed an the cameras can move freely.



## 6. Mounting the Rig

Depending on the situation you use the PS Freestyle Rig there are different ways to mount it on your equipment.

### 6.1. Tripod use

The rig with the camera will be naturally front heavy when mounted on a tripod, limiting the range of downward tilting.

To balance the tripod head use the PS Magic Support or add 15mm rods on the backside of the Chassis and mount them with equipment as a counter weight.

To extend the range of downward tilting use the PS Magic Support or the PS Extension Plate.

### 6.2. Crane use

Even the PS Freestyle Rig is very compact you may have problems to mount it on a camera crane or to tilt and turn it on the crane in complete range. To avoid these problems use the PS Extension Plate or the PS Magic Support. To balance the crane head P+S TECHNIK recommend the PS Magic Support.

For very low shoots mount the PS Freestyle Rig in low mode on the crane head. To avoid damages of the horizontal camera use the PS Hot Rods.



low mode



normal mode

In low mode the rig is mounted upside down. Mount the optional french flag on the other side of the mirror box. Refer to chapter 5.1. for details.



**NOTE:** Verify that the head of the crane and the cameras can move freely. Use safety lines or straps for cameras and rig to assure the safety of the system. To secure the chassis you can use PS Hot Rods or the cable clamp.



**NOTE:** Fix the adjustment in the position in which you will use the rig. When you use the rig in low mode, align and fix the cameras in low mode. See chapter 7. for details.

## 6.3. Steadicam use



NOTE: When the interaxial is changed one camera moves to the one side while the other camera moves to the other side. So the rig stays balanced even when the interaxial is changed.

- Balance your steadycam system to check the configuration

## 6.4. Shoulder use

- Attach the optional handgrip extensions and handgrips to the chassis. Adjust for comfort.
- Attach the shoulder pad to the chassis and adjust the position of the pad to your shoulder.
- Mount the Freestyle Rig on a tripod with TV-tap when the ergonomics are correct.
- Set up the rig with cameras and accessories.
- Balance the rig as described in chapter 7.1.
- To use and secure the PS Freestyle Rig with an Easy Rig use the PS Hot Rods to attach it.

## 7. Calibration

Additionally to this User Manual you find an Video Tutorial about calibrating the PS-Freestyle Rig on our website ([www.pstechnik.de](http://www.pstechnik.de)) and on our Vimeo-Channel ([vimeo.com/pstechnik](https://vimeo.com/pstechnik)).

### 7.1. Balancing the Rig

#### **Balancing the Rig with equipment (Steadycam, Shoulder, Tripod)**

- Mount the cameras on the Rig. The rig is front-heavy now.
- Add two 15mm rods on the backside.
- Mount the equipment (batteries, syncbox, controller, etc.) on the 15mmrods. The weight of the equipment will lessen the front-heaviness. A dedicated battery and accessory-holder is an optional accessory available from P+S TECHNIK.

#### **Balancing the Rig with the Magic Support (Tripod, Crane)**

- Mount the PS-Freestyle Magic Support. Therefore refer to the PS Magic Support User Manual.
- Adjust the angle of the PS-Freestyle Magic Support until the Rig is balanced on the Tripod Head / Crane Head

### 7.2. Mechanical Image Correction



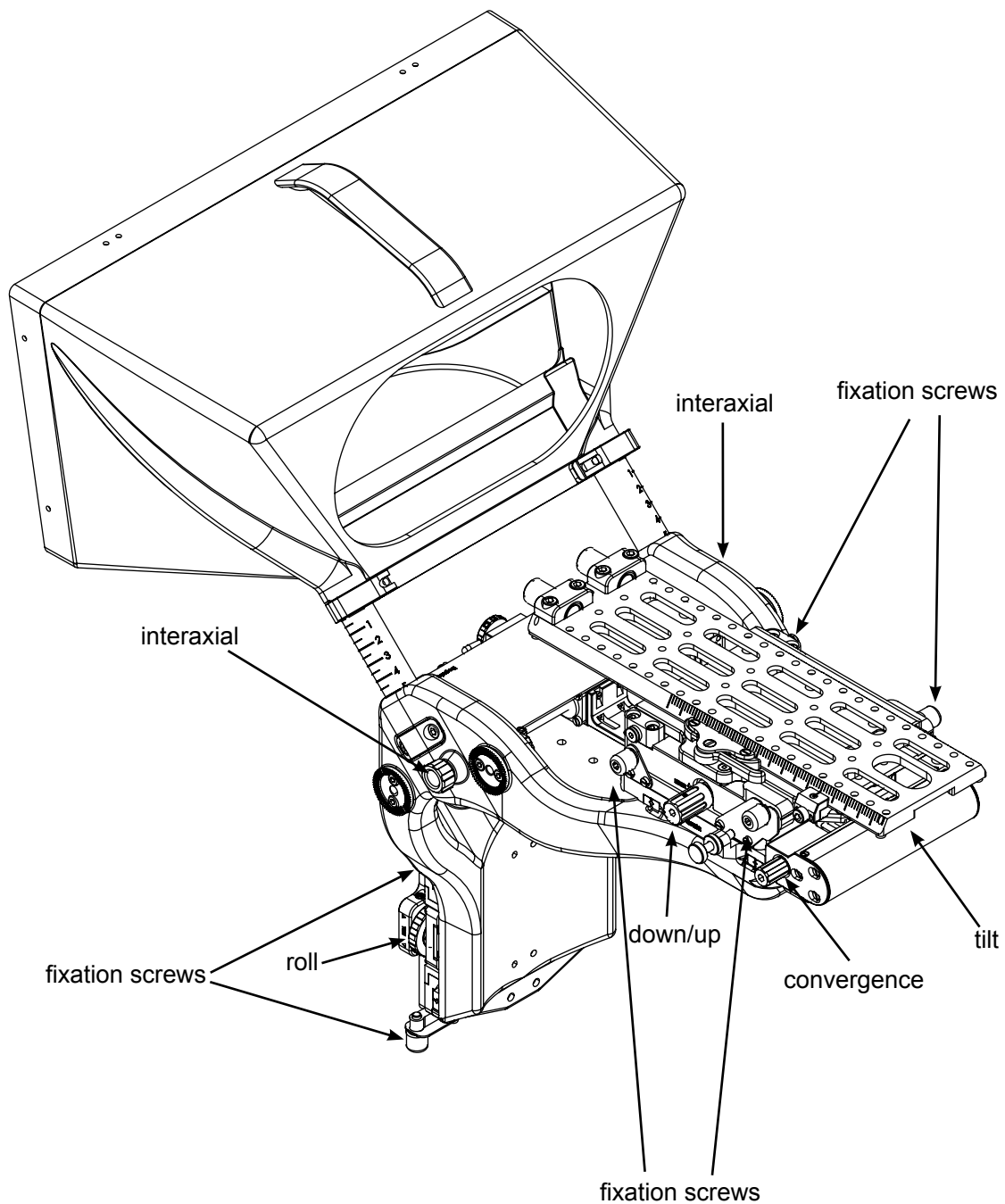
NOTE: All adjustments start from the middle (or zero) position



NOTE: To match the cameras you need an appropriate test setting. It should contain vertical and horizontal structures in the background like a door or a building. You also need some vertical and horizontal structure in the foreground very close to the mirror box. Both test patterns should be mounted parallel to the camera. For perfect alignment special testcharts can be helpful. Both test charts should be visible so you can see aberrations in foreground and background simultaneously.

1. Mount the cameras on the same distance to the Mirror Box. Disconnect or switch-off the remote control system so that you can move interaxial and convergence manually.
2. Release the four fixation screws.
3. Verify the cameras can move freely in the complete range of interaxial.

4. Mount the cameras in the markers zero-position (interaxial, convergence, tilt, height, roll).

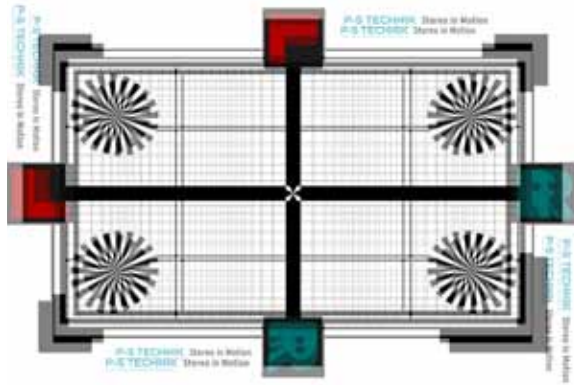


5. Place one chart in foreground, one in background. Both charts should be visible at the same time. It is also possible to look at horizontal and vertical structures in the background of the scene instead of a chart.

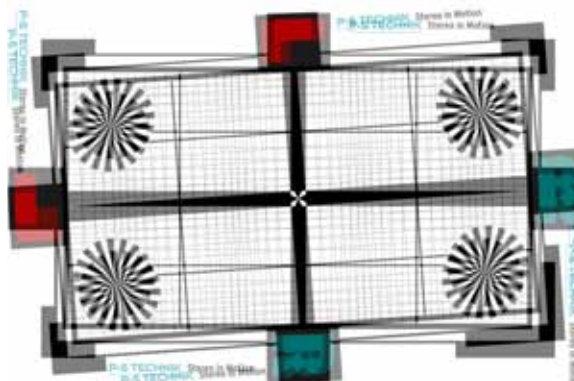
6. Display both cameras in anaglyph, difference or overlay.

7. Check that both cameras are flipped in the correct position (left-right, top-bottom).

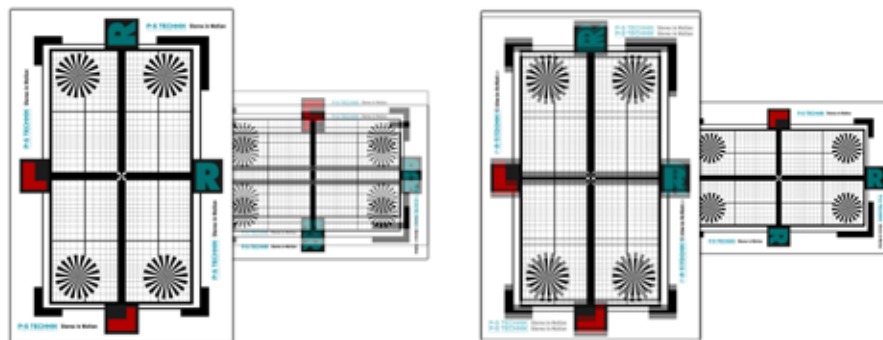
8. Zoom lenses: Correct image size with zoom.



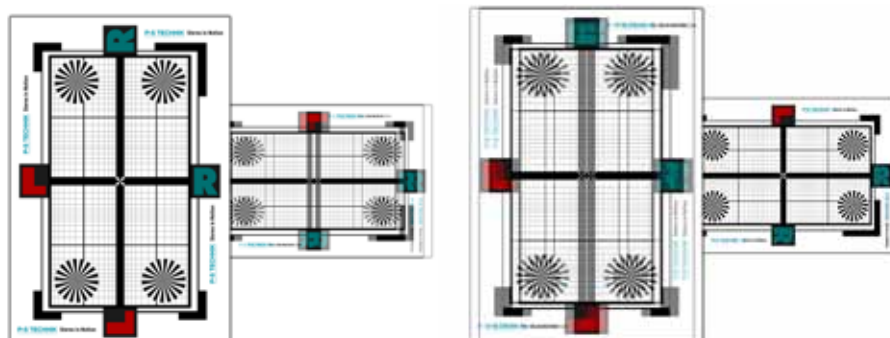
9. Correct the roll (different height-offset from left to right).



10. Change tilt to correct offset in background, change height (down/up) to correct offset in foreground. Repeat until there is no more height offset in foreground and background .



11. Change convergence to correct side offset in background, change interaxial to correct offset in foreground. Repeat until there is no more side offset in foreground and background.



12. The adjustable axes influence each other. Repeat the calibration until no offset is left.

13. Fix the calibration by fastening the fixation screws

### 7.3. End Stop setting

- Set mechanical end stops of interaxial and convergence when camera are perfectly matched with no parallax.
- Set your interaxial and convergence end stops in regular or goofy position depending on how the Freestyle Rig will be used.

Verify the whole rig is set goofy (or regular). This includes:

- Interaxial end stop
- Convergence end stop
- Light protection
- Cameras and lens support can move freely.

### 7.4. Remote Control Calibration

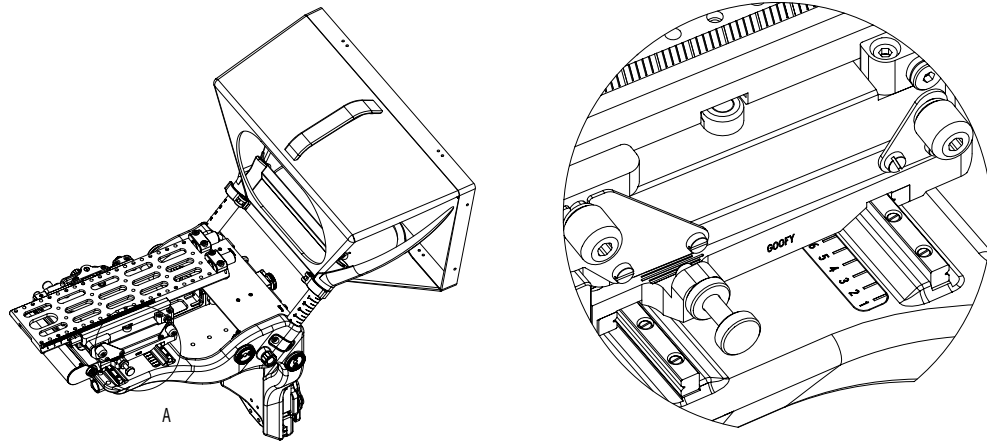
The 3D parameters interaxial and convergence can be motorized using the built-in motors and a wireless lens control system. The motors in the rig are similar to Hédèn Motors.

- Verify all end stops (interaxial, convergence) are set
- Switch on on your Remote Control System
- Start the auto calibration of your Remote Control System
- Verify cameras can be moved to every interaxial position prior to calibrating the remote control system
- Wait until your Remote Control System has completely calibrated

## 8. 3D Adjustment

### 8.1. Manual Adjustment

You can move the knobs for interaxial and convergence manually. The Free-style Rig with its built-in motors is made for remote control use so the ease of use in manual mode is limited. Disconnect or switch off the remote control system so that you can move interaxial and convergence manually. The interaxial offset is shown in centimeters on both sides of the rig.



### 8.2. Motorizing lens and focus control

#### **Focus and Iris**

In addition to the 3D-parameters you can motorize focus and iris. Use a second lens control system that is able to handle two lenses in sync.

#### **Zoom**

For zooming in 3D you need two perfectly matched camera and zoom setups.



**NOTE:** Verify the attachment of your lens control system does not get in the way of the rigs interaxial movement.

## 8.3. Live Integration

### About

The combination of the PS-Freestyle Rig with the Sony MPE-200 control box, the SonyS3D-multiplexer HDFA-200 and some box cameras (e. g.HDC-P1) is an excellent tripod setup for 3D live broadcast. P+S TECHNIK developed all the accessories needed to integrate this setup in one compact, lightweight and low unit. The Sony HDFA-200 is a fiber multiplexer for S3D. Every signal, including power, sync, video and genlock is mixed into one hybrid fibre and controlled from one CCU. Since

### Key Features

- Designed for ease-of-use multi-camera live applications
- Single fibre output from the rigs back to the MPE-200
- 3D stereo image processor
- Stable rig control/vision control from the OB-van
- Very low, compact and lightweight
- 100 % balanced (even if tilted downwards)
- Optimized for quick setup

3D Live Control for P+S TECHNIK 3D Rigs the rig control can also go through the fibre, all cables are reduced to only ONE fibre cable. The Free-style Sony HDFA-200 plate makes the setup of rig, tripod and multiplexer fit together perfectly. In the OB-Van/control room everything can be analyzed and controlled through the CCU and MPE-200. The stereoscopic rig-parameters as well as the initial calibration can be handled with the MPE-200. Through digital signal processing, the stereo parameters (interaxial, convergence) can even be controlled fully automatically.

For further information refer to the PS-Freestyle Live Integration User Manual.



## 9. Operating under special conditions

### 9.1. Maintance

The PS-Freestyle Rig is well prepared for outdoor use under almost every circumstances. Only when you shoot under very rough circumstances with a lot of dust, sand or humidity it is helpful to do an easy service by yourself to keep your Freestyle Rig ready for shooting.

#### **What you need:**

- Cleaning oil, we recommend WD 40
- Grease, we recommend Klueben LDS 18/05 or Klueben Unimoly GL 18

#### **What you have to do:**

- Remove the cameras from the Freestyle Rig
- Remove the fixation screws (Tilt: 4 screws / Roll: 2 screws)
- Turn the Tilt/Roll Screw until its screws is removed from its internal thread completely or as far as possible.
- Clean the Tilt/Roll screw and its internal thread by removing the dust, sand and dirt carefully by using cleaning oil
- Put some grease onto the Tilt/Roll Screw thread and its internal thread
- Screw the Tilt/Roll Screw back into its internal thread
- Put the fixation screws back into their interal threads
- Put the cameras back on the Freestyle Rig

### 9.2. Special Equipment

#### **The PS Freestyle Protection Glass**

The PS Freestyle Protection Glass protects the Mirror from dirt, dust and water without any practical loss of light. The Mirror Box is already equipped with the appropriate tool-free mounting system.

#### **The PS Freestyle Quarterwave Filter**

The PS Freestyle Quarterwave Filter avoids ghostings from reflections on glass, water and other reflective and shiny surfaces. The Mirror Box is already equipped with the appropriate tool-free mounting system.

#### **The PS Freestyle Raincover (planned)**

The PS Freestyle Raincover protects the PS Freestyle Rig from moisture.

### The PS Hot Rods

The PS -Freestyle Hot Rods are designed to make the handling of the PS-Freestyle Rig even more easy and secure: The PS Hot Rods can be used as hand grips to carry the PS-Freestyle Rig around or to fix cables and other equipment on them. Furthermore the PS-Freestyle Hot Rods form a protective cage which protects the horizontal camera from knocks and bumps and give you the opportunity to secure the PS-Freestyle Rig with an Easyrig or an safety leash.



### The PS Magic Support

The PS-Magic Support is designed for crane and tripod use. It gives you more freedom in moving the PS-Freestyle Rig because the vertical camera does not get in conflict with the tripod anymore. Furthermore the front-heaviness of the PS-Freestyle Rig can be balanced by the angle of the PS-Magic Support and the tripod head.



When using the PS-Freestyle Rig on a crane with an L-shaped head you can set the balance point of the PS-Freestyle Rig right into the crane head's center of rotation by adjusting the angle of the PS-Magic Support, so the crane head is perfectly balanced and easy to tilt.

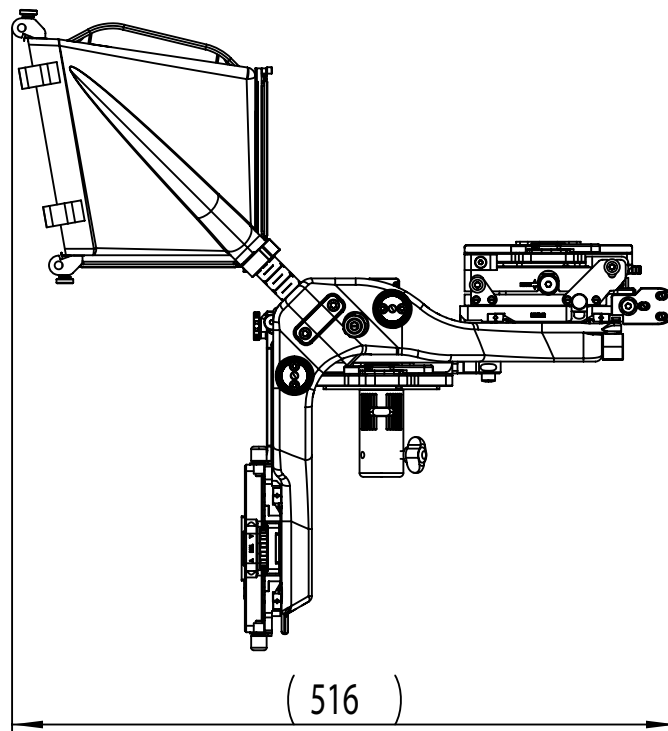
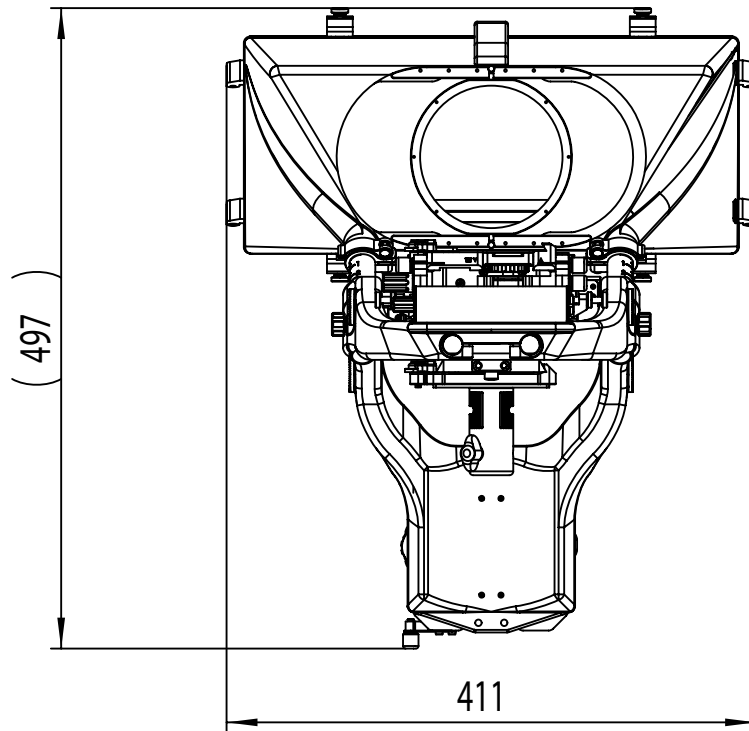
The triangle shape the PS-Magic Support also increases the stiffness of the PS-Freestyle Rig Chassis.

## 10. Technical Specifications

### 10.1. Data sheet

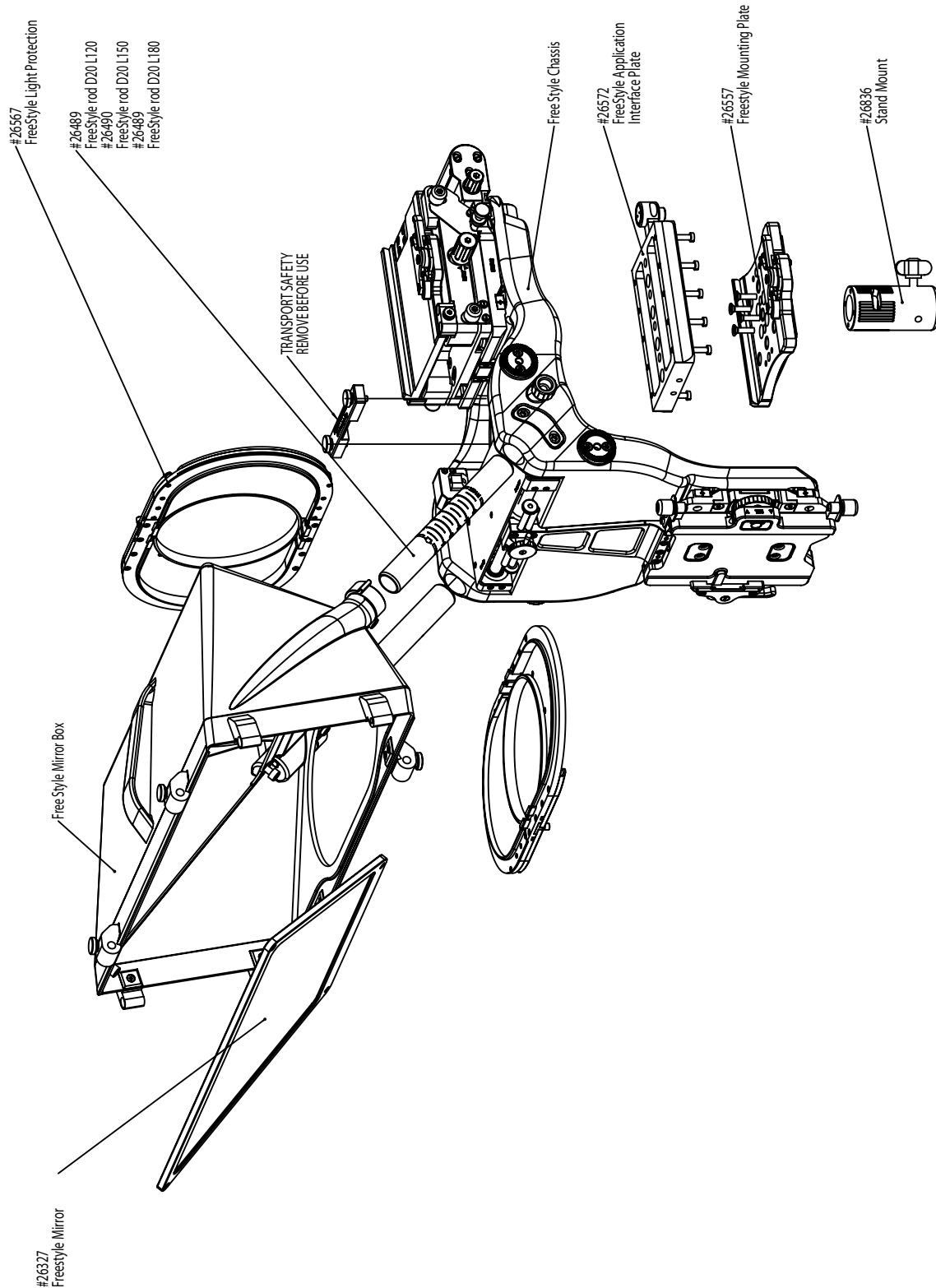
Camera	Description	Specification
Cameras	Camera compatibility	Any camera up to 9 kg / 19.8 lb per
camera setup	Max. payload	2x 9 kg / 2x 19.8 lb per camera setup or 27 kg / 59.5 lb in total
Max. front lens diameter (16:9)	Light Protection with Flexi Insert Ring	105mm / 4.13 In
	Light Protection without Flexi Insert Ring	110mm / 4.33 In
	Without Light Protection	120mm / 4.72 In
Stereoscopic Parameters	Interaxial adjustment range	0 – 100 mm / 0 – 3.94 in
	Convergence adjustment range	+/- 3°
Additional Parameters	Roll fine adjustment range	+/- 1,5°
	Tilt fine adjustment range	+/- 1,5°
	Height fine adjustment range	+/- 2,5 mm / +/- 0.1 in
Motorization	Interaxial	Integrated Hédèn motor
	Convergence	Integrated Hédèn motor
	Focus, iris	Optional
	Zoom	Optional
Weight	without front glass and cameras	Approx. 7,4 kg / 16.3 lb

## 10.2. Dimensions

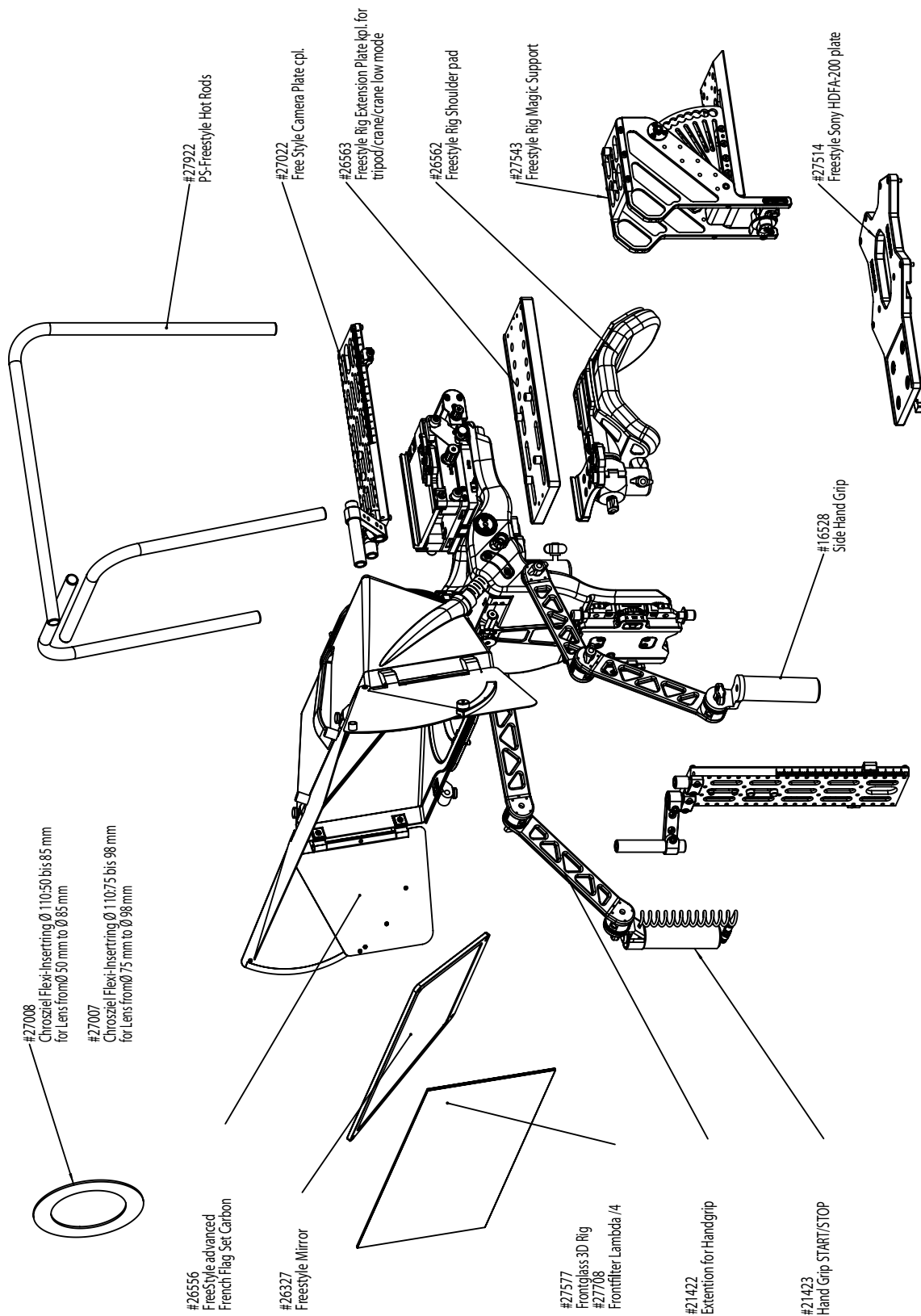


# 11. Quick References

## 11.1. Delivery content pattern



## 11.2. Accessories pattern



## 12. Manufacturer Information

The manufacturer of this product is

P+S TECHNIK GmbH

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